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## Design of a new bandpass filter using anti-Parallel coupled asymmetric SIRs

Lee, Ching-Her; Hsu, Chung-I G. ; Jhuang, He-Kai

### Abstract

In this paper a newly designed internally-coupled asymmetric stepped-impedance resonator (SIR) bandpass filter (BPF) is proposed. The asymmetric SIR structure not only can effectively reduce the circuit size but also can provide two flexibly tunable transmission zeros near the lower and upper passband edges. The first transmission zero is due to the series resonance of the quarter-wavelength open stepped-impedance stub, and the second one is produced by anti-parallel coupling between adjacent SIRs. The proposed BPF was fabricated and simulated using the commercial software HFSS, and agreement between the measured and simulated results was observed. A 0.9-dB insertion loss and a shape factor of 3.6 were achieved in the passband, thus indicating that the proposed filter structure is of practical value.

Key words : Bandpass filter; Stepped-impedance resonator;

Transmission zero